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NRDC POLICY REGARDING GEOTHERMAL DEVELOPMENT ON THE ISLAND OF HAWAI'I

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Overview

Proposed geothermal development on the island of Hawai'i has been the subject of controversy for most of the last decade, and publicity and concern about its impact on the rainforest have recently spread to the mainland. While NRDC has not previously opposed the development, we are concerned that the state is moving too quickly on geothermal power for two reasons. First, ongoing and planned exploration and large-scale development of geothermal power on the island of Hawai'i will undeniably have a serious impact on that island's remaining native lowland 'ohi'a rainforests, already reduced to only about ten percent of their original extent statewide. Second, the state of Hawai'i lags far behind other states in developing a much more reliable and economic source of power: energy conservation. Given the substantial environmental, cultural and public health impacts of geothermal power and its uncertain but likely high cost, it behooves the state to pursue energy conservation to its fullest potential before investing any further efforts in geothermal development at this time.

Background

The state of Hawai'i has been concerned since the oil price shocks of the late 1970s about its 90 percent dependence on petroleum. In 1978, the state contracted with the Lawrence Berkeley Laboratory, which has been a leader on alternative energy development, to study Hawai'i's energy options. One of the major conclusions of the report, completed in 1981, was that "[g]eothermal energy is the only large-scale indigenous, baseload electricity source that is now commercially mature." The state has been pursuing this path aggressively ever since, streamlining its laws and regulatory processes to expedite approval of geothermal development; investing its own dollars in an experimental exploration and development facility; actively encouraging private exploration and development; and obtaining

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federal funding for exploration and for development of underwater cable transmission technology.

While the state's ultimate goal is to develop a total of 500 megawatts (MW) of geothermal power (as compared to present capacity of nearly 1600 MW statewide), there are currently only two projects under consideration, with a total capacity of 125 MW. The first is a 25 MW project on land currently classed as "Agricultural" in the Kapoho Geothermal Resource Zone (GRS) (see attached map), undertaken by Ormat Energy Systems. The Ormat project has received permits to initiate well drilling but still lacks permits needed to begin power generation. Nonetheless, it is scheduled to begin delivering power by March 1991. The second is a 100 MW project by True/Mid-Pacific Geothermal Venture in the Wao Kele 'O Puna forest area. This area lies in land designated as "Conservation" in the Kilauea Middle East Rift GRS (see map). The True/Mid-Pacific project has received permits to construct twelve testing wells, but the bulk of the proposed project has not yet been approved by regulatory authorities.

The True/Mid-Pacific project has been far more controversial than the Ormat project, in large part because the "Conservation" land where it is located is considered an important remnant of Hawai'i's low-elevation rainforest. NRDC's concerns deal primarily with the True/Mid-Pacific project and with additional exploratory efforts underway or planned to prove up the remainder of the 500 MW ultimately proposed for development.

Impact on the Rainforest

As indicated above, geothermal development has already begun at Wao Kele 'O Puna, which represents a major portion of the remaining low-elevation rainforest in Hawai'i, stretching from Puna into Hawai'i Volcanoes National Park through Kahauale'a. As currently planned, the 100 MW True/Mid-Pacific project alone will result in the drilling of up to six wells in each of as many as thirty-five sites of two to three acres apiece; it will place five power plants on plots of five to eight acres apiece; and will interconnect these with as much as fifty miles of roads, pipelines and transmission corridors occupying up to 140 acres.

The total area thus affected by the proposed 100 MW project would be between 245 and 305 acres. While this total area represents only about three percent of the forest, its loss is extremely undesirable given how little of the original forest now remains. Moreover, while the impact on the disturbed area may appear inconsequential because it will be dispersed rather than concentrated in one clearcut area, it is the dispersed nature of the impact that represents the greatest threat to the remaining forest and gives us greatest concern.

It is not widely appreciated, but the main threat to Hawai'i's remaining forests comes not from wholesale logging, but

from intrusion and dominance by non-native plants and animals brought to Hawai'i deliberately or accidentally by humans. (See NRDC's report, Extinction in Paradise, for a fuller discussion of the problem.) Hawai'i's native plant and animal species, which evolved in the absence of mammals (except for a bat and a monk seal) and pests such as mosquitoes, are no match for feral pigs and goats or fast-growing vines such as the banana poka from Colombia. Because the new roads provide new highways for the spread of alien plants and animals, the effect of the extensive network of roads throughout the forest will be to jeopardize the health of the entire area, not just the land that has been cleared.

Some geothermal proponents have attempted to counter this criticism by claiming that the forest is not of high quality because it already contains some non-native species. While this assertion is true for some of the forest, most of it is now dominated by native trees and shrubs, and it provides habitat for several native bird species ('amakihi, 'omao, and apapane). These species are not yet officially considered endangered, but they are rarely found now at such low elevations. Scientists therefore value their continuing presence in this area as a possible clue to the absence of the species elsewhere at this low elevation. In addition, scientists find the area valuable for the study of evolutionary biology, because the soils are relatively young (75 percent are less than 500 years old).

Geothermal Not the Least-Cost Option

Sound energy policy and economic common sense dictate that a state or utility in need of additional supplies develop its least-cost resources first. Many other states throughout the country have based their regulation of utilities on such a policy, and have found energy conservation to be the least expensive resource. But neither the state nor the utilities of Hawai'i have yet undertaken the analysis needed to determine Hawai'i's least-cost energy options.

To its credit, in January the Hawai'i Public Utilities Commission ordered the commencement of a proceeding to begin just such a planning process. It is possible that this evaluation will reveal that some geothermal development may be cost-effective and sensible as part of an overall supply plan for Hawai'i. But aggressive development of geothermal power now, before the proceeding has even begun, does not represent good energy policy.

The geothermal option entails a number of risks, which proponents have failed to refute despite the numerous times they have been raised by critics. Most notable among them is the technological uncertainty associated with construction of the underwater cable needed to bring the power to the population centers on Oahu and thus make the project profitable. Cost

uncertainties result as well from questions about the reliability of the geothermal resources. Ironically, development of geothermal power would make only a small dent in the state's oil dependency, because the state's power plants use only about thirty percent of the state's oil imports.

Geothermal: An Idea Whose Time Has Not Yet Come

Hawai'i's rush to embrace geothermal power as an alternative to petroleum is reminiscent of the Pacific Northwest's ill-fated "WPPSS" nuclear program. While the most prominent public concerns presently are related to cultural and environmental impacts, a hard look has not yet been taken at the economics, nor has a side-by-side comparison been made with other alternatives, including energy conservation. Until that comparison has been made through the proceeding ordered by the PUC or in some other public process, NRDC believes that any further exploration and development of geothermal power in the Wao Kele forest is premature.